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Indian Standard

METHOD OF SAMPLING FOR LEATHER

(First Revision)

UDC 675·06 : 620·113

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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December 1983

Indian Standard

METHOD OF SAMPLING FOR LEATHER

(First Revision)

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(*Continued on page* 2)

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Indian Standard
METHOD OF SAMPLING FOR LEATHER
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 June 1983, after the draft finalized by the Leather Sectional Committee had been approved by the Chemical Division Council.

0.2 The Indian Standard covering methods of sampling for leather (IS : 582-1954*), based on BS 1309-1946 'Methods of sampling and analysis of vegetable tanned and chrome tanned leather' and 'the official methods of sampling and test (1954)' adopted by the Society of Leather Trades Chemists (SLTC), UK, was originally published in 1954. Since then both SLTC and British Standard methods have been revised. In the meantime International Union of Leather Chemists's Societies (IULCS) have published methods of sampling covering all types of leathers. A technical committee, ISO/TC 120 Leather, set up in 1966 under the auspices of International Organization for Standardization has in principle decided to base all its standards on methods published by SLTC and IULCS. Consequent upon these developments, the committee responsible for the preparation of this standard decided to revise the sampling procedures given in IS : 582-1954* and IS : 1016-1956† based on the methods of sampling issued by IULCS.

0.3 Consequent upon the publication of International Standards, ISO 2418-1972 Leather — Laboratory samples — Location and identification, ISO 2419-1972 Leather — Conditioning of test pieces for physical tests, ISO 2588-1973 Leather — Sampling – Number of items for gross sample and ISO 4044-1977 Leather — Preparation of chemical test pieces the Indian Standard has been reviewed for alignment. The Leather Sectional Committee, CDC 16 decided to revise IS : 5868-1969 in order to align it with these International Standards.

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*Methods of sampling and test for vegetable and chrome tanned leathers.

†Methods of sampling and test for oil tanned leathers.

0.4 In this revision, the conditioning clause for physical test has been deleted as this clause already exists in LP : O of IS : 5914-1970*. The table showing the number of test pieces to be selected from a lot for visual inspection has also been deleted and instead it is prescribed that the entire lot shall be inspected visually considering the general trade practice.

0.5 While preparing the standard, assistance has also been drawn from the following publication:

> Sampling position of vegetable tanned Indian buffalo hides. JALCA 71, 10; 1976; 465-474.

0.6 This standard is a necessary adjunct to the various Indian Standard specifications on leather.

1. SCOPE

1.1 This standard prescribes the methods of sampling for non-fabricated leather in the form of whole hides of skins, sides, butts, bends, bellies or shoulders.

1.1.1 This sampling procedure is intended for use in obtaining representative samples of leather for carrying out visual, physical, chemical and other tests.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 1640-1960† shall apply.

3. SAMPLING

3.1 Scale of Sampling

3.1.1 *Lot* — All the pieces of leather of the same type, grade, and from the same batch of manufacture, in one consignment, shall constitute a lot.

3.1.2 The number of individual pieces of leather to be selected from/lot for sampling shall depend upon the size of the lot and shall be in accordance with **3.1.2.2** and Table 1.

3.1.2.1 The entire material under each lot shall be inspected visually.

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*Methods of physical testing of leather.

†Glossary of terms relating to hides, skins and leather.

TABLE 1 NUMBER OF LEATHER PIECES TO BE SELECTED FROM A LOT FOR TESTS OTHER THAN VISUAL INSPECTION

(*Clauses* 3.1.2 *and* 5.2)

Lot Size (N)	No. of Pieces To be Selected (n)
(1)	(2)
Up to 200	2
201 to 400	3
401 to 600	4
601 and above	5

3.1.2.2 These pieces in the sample shall be selected at random from the lot and for this purpose random number tables (*see* IS : 4905-1968*) shall be used. In case random number tables are not available the procedure given below shall be adopted for the selection of sample pieces:

> Starting from any piece, count them as 1, 2, 3, ..., up to r and so on in one order. Every rth piece thus counted shall be withdrawn to give a sample for test, where r is the integral part of N/n (N being the size of the lot and n the number of pieces to be selected).

3.2 Location of Laboratory Sample

3.2.1 *General*

3.2.1.1 Areas selected for cutting laboratory samples shall be free from all kinds of obvious defects such as scratches and flay cuts.

3.2.1.2 For physical test samples, take leather from the shaded areas specified in **3.2.2**, **3.2.3**, **3.2.4** or **3.2.5** as appropriate.

3.2.1.3 For chemical test samples, take leather from the unshaded areas specified in **3.2.2**, **3.2.3**, **3.2.4** or **3.2.5** as appropriate (*see* Note 1).

3.2.2 *Whole Hides and Skins, Sides and Backs*

3.2.2.1 Take the shaded square piece or the unshaded square piece 'GHK J', shown in Fig. 1.

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*Methods for random sampling.

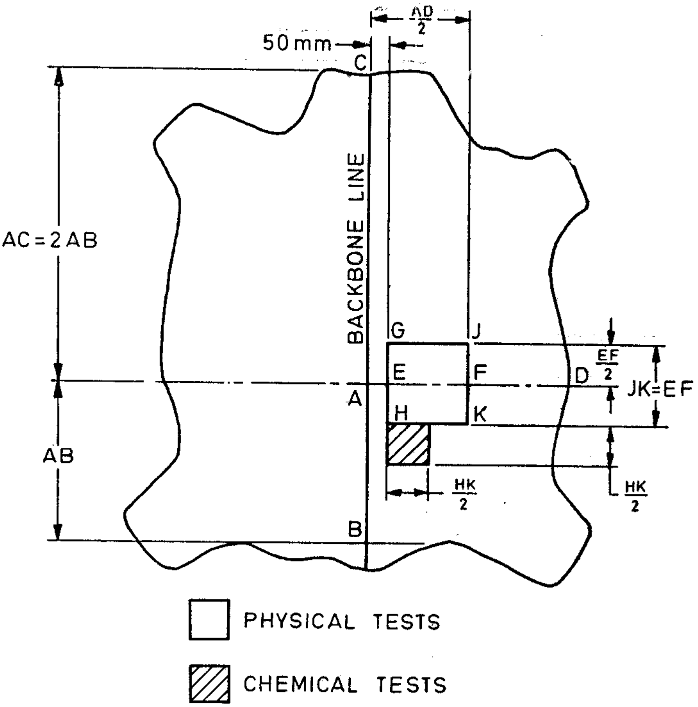

FIG. 1 LOCATION FOR CUTTING OUT TEST PIECES IN A WHOLE SKIN, HIDE AND SIDE

3.2.3 *Bends* (*Butts*)

3.2.3.1 Take the shaded square or the unshaded square portion 'GHKJ', shown in Fig. 2.

3.2.4 *Shoulders*

3.2.4.1 Take the shaded rectangular piece or the unshaded square piece 'ABCD', shown in Fig. 3.

3.2.5 *Bellies* (*Flanks*)

3.2.5.1 Take the shaded rectangular pieces or the unshaded square pieces shown in Fig. 4.

NOTE 1 — Unless arbitration analysis are being undertaken, uncontaminated trimmings from physical test pieces can be used for chemical analysis.

NOTE 2 — If the minimum prescribed mass is not attained, even by using trimmings, which may occur with some light leather, sample from the corresponding area on the opposite side of the backbone. If this is impossible, additional material can be taken from the area immediately adjacent to the sampling position. In arbitration analysis, only leather taken from the appropriate unshaded areas illustrated in the figures of this national standard shall be used as chemical test samples, and only leather taken from the appropriate shaded areas shall be used for test pieces.

NOTE 3 — The results of some physical tests depend on the direction (relative to the line of the animal's backbone) in which the samples are cut. For these tests, the intended use of the leather should be considered when the direction of cutting is specified.

NOTE 4 — In small skins, the distance '*EF*' in Fig. 1 may be shorter than the length required for a single sample. In any specification dealing with such small skins, some modifications will be required in the method of sampling.

NOTE 5 — If a specification calls for several test pieces from the same skin, hide, side, bend or shoulder, to be used for tests of different physical properties, the specification may lay down the relative position from which the test pieces are to be cut (within the areas specified by this national standard); for instance, a specification calling for tests of tear strength and tensile strength of whole skins might require that three tear strength test pieces be cut immediately adjacent to the line *EF* (*see* Fig. 1) and that the tensile strength test pieces be next to these and, therefore, more distance from *EF*.

NOTE 6 — In cutting samples from sides (but not from whole skins or hides nor from backs or bends) it may be desirable to avoid the use of material within 100 mm of the backbone for certain tests, because of local effects due to tension in sides toggled out to dry. The leather between 50 and 100 mm from the backbone should not be used, for example, in measurements of extensibility.

NOTE 7 — In the case of arbitration analysis with respect to leathers made of buffalo hides, the sampling position for both physical testing and chemical analysis could be as follows:

> The location at 240 mm from the line of the backbone at the butt area and 100 mm from the root of the tail, each multiplied by the correction factor. The correction factor is obtained as a ratio of the length in millimetres of the individual hide to 1 750 mm, which is the average length of Indian buffalo hide.

4. PREPARATION OF TEST PIECES FOR CHEMICAL TESTS

4.1 Leather pieces cut from the sample of a whole skin, hide and side, or butt, or belly, or shoulder, according to the consignment of the leather, shall first be cut into small pieces and then ground in a cutter mill, with a knife velocity of 700 to 1 000 revolutions per minute and a sieve with 4 mm diameter mesh. The ground material obtained from the mill is called 'ground leather' or 'leather powder'.

NOTE — Mill sieve and catching box shall be thoroughly cleaned every time they have been used. Before grinding a new sample, it is advisable first to grind a few small pieces of the leather, throw away the leather powder obtained, thoroughly clean the mill, sieve and catching-box again, and only then grind the whole sample. Water or damp textiles should not be used for cleaning.

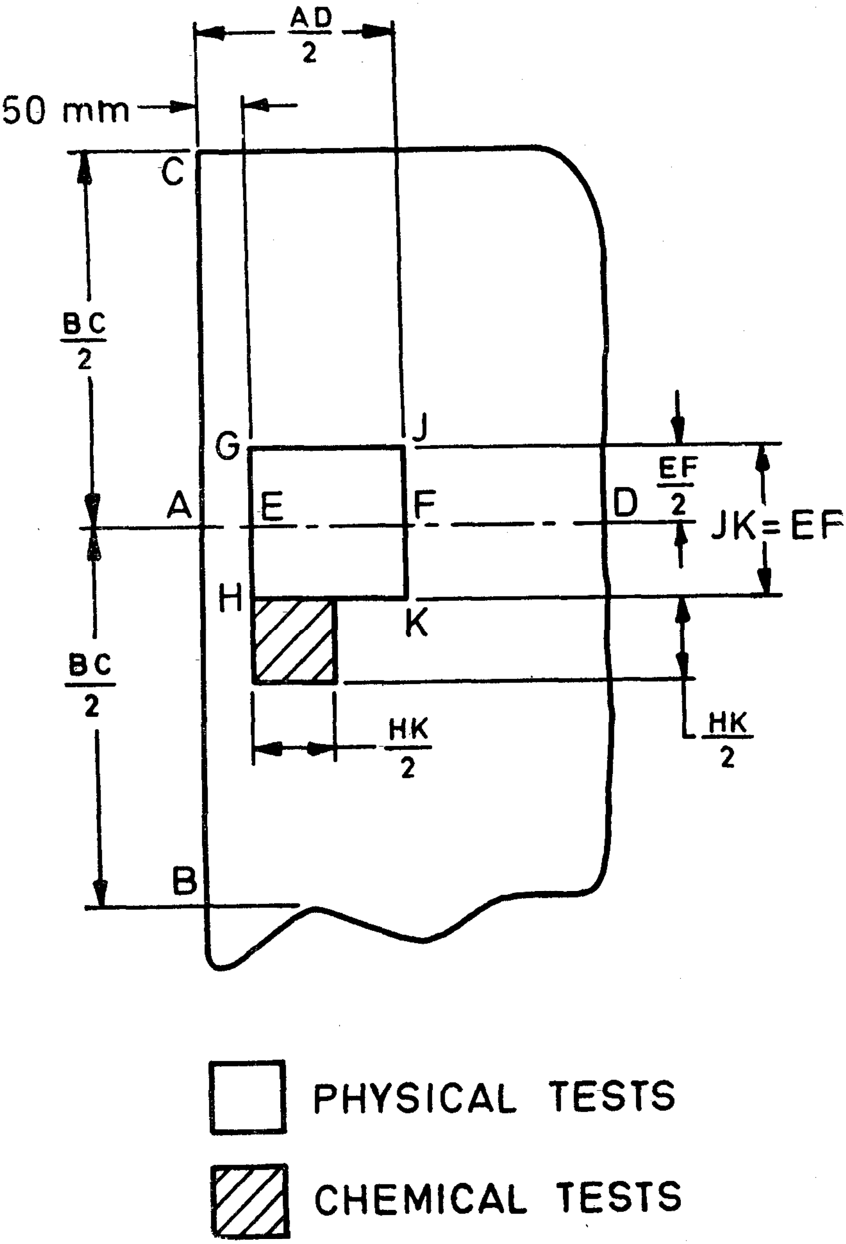

Fig. 2 Location for Cutting Out Test Pieces in a Bend (Butt)

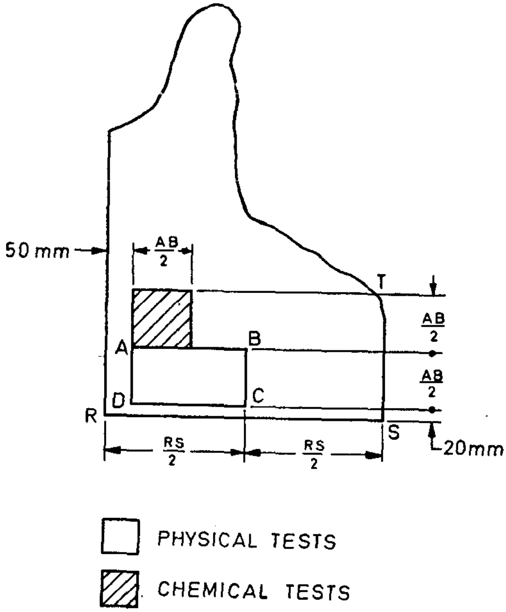

FIG. 3 LOCATION FOR CUTTING OUT TEST PIECES IN A SHOULDER

4.1.1 If the leather to be chemically investigated is wet or damp, a known quantity of the leather shall be predried at a temperature not exceeding 50°C and then conditioned for 24 hours before grinding. On no account should wet or damp leather be ground in the mill.

4.1.2 *Storage of Ground Leather* — The ground leather prepared as in **4.1** shall be mixed thoroughly and placed in clean, dry, air-tight containers. The container should preferably be kept in a standard atmosphere 65 ± 2 percent relative humidity and 27° ± 2°C (*see* IS : 196-1966*) but in any case away from localized heat. The bulk of the ground leather for test should be in the same state of moisture content whenever a portion is taken for test.

4.1.3 *Minimum Mass of Material to be Taken from Each Piece* — The following minimum mass of materials are recommended for complete chemical test of leather:

Vegetable and combination tanned leather	100 g
Mineral tanned leather	60 g

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*Atmospheric conditions for testing (*revised*).

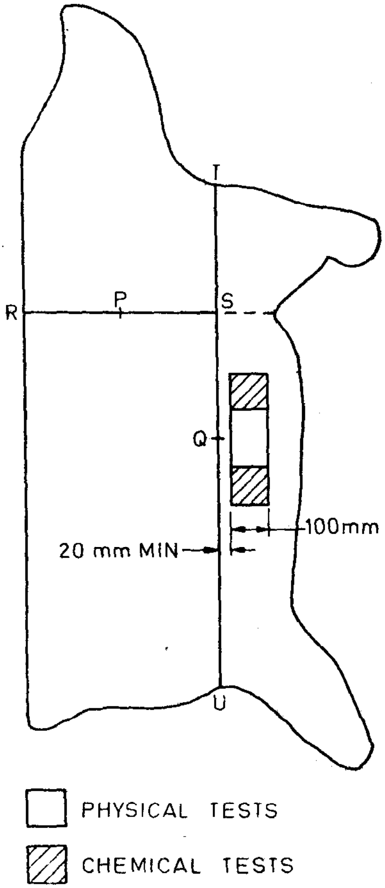

FIG. 4 LOCATION OF CUTTING OUT TEST PIECES IN A BELLY

5. CRITERIA FOR CONFORMITY

5.1 All the samples, selected for testing in accordance with **3.1.2.1** shall be tested for all requirements prescribed in the relevant material specification and if all such selected samples conform to the requirements of that standard, the lot shall be declared to conform to the requirements of the relevant standard.

5.2 The lot having been found satisfactory for all the visual requirements, shall be further tested for other requirements. For this purpose, number of samples to be taken shall be in accordance with Table 1. If all such selected samples conform to the requirements of the relevant specification, the lot shall be declared as conforming to the relevant standard; otherwise not.